Time Horizon and Fiscal Balance in Authoritarian Regimes

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Thesis submitted in partial fulfillment of
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Master of Arts in the Department of
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ABSTRACT

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Abstract

In this paper, I explore the implications of a dictator's time horizon on the fiscal balance of an authoritarian regime. A dictator with a longer time horizon will discount the future less, thus is more responsible in spending. Since a dictator's time horizon is not directly observable, I discuss the factors that would affect a dictator's time horizon and their influence on the fiscal balance of an authoritarian regime. Testing the results using OLS regressions, limited evidence is found to support my hypotheses. Possible reasons for the inconclusive results are explored and further improvement and future research possibilities are discussed.

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1. Introduction

Fiscal deficits have increasingly become a crucial problem of politics in the modern world. The United States government has accumulated a large amount of debt and the failure to reach consensus on debt ceiling has led to government shutdown. The overspending of Southern European nations on welfare has contributed to the Euro-Crises, as the fiscal deficits of these countries have prevented their governments from using stimulus packages in a global recession.

Economic theories consider fiscal deficits as a buffer that smoothens government spending as government spending has to stay relative stable while tax revenue fluctuates along with the business cycle (Barro 1979). Yet economists have recognized that economic motivation itself cannot fully explain the pattern of fiscal deficits in the developed world (Alesina and Perotti 1995). Multiple theories have been created to explain the political aspects of fiscal deficits. Some suggest that politicians spend public money to create a fiscal illusion to gain a better chance of reelection (Buchanan and Wagner 1977; Alesina, Cohen, and Roubini 1992; Cukierman and Meltzer 1989; Brender and Drazen 2004). Others suggest that fiscal deficits are a result of strategic interaction between different generations of the population (Cukierman and Meltzer 1989), the current and the future governments (Alesina and Tabellini 1990), or parties with different preferences on the level of spending (Persson and Svensson 1989; Tabellini and Alesina 1990).

Yet, despite the richness of the literature on the political economy of fiscal deficits, the center of attention is on industrialized democratic countries. Empirical works focus primarily on OECD countries, with only a few exceptions (Brender and Drazen 2004; Shi and Svensson 2006; Alt and Lassen 2006). Since most developed countries are democracies, little ink has been spilt on the political dimensions of fiscal deficits in authoritarian regimes. In addition, most existing theories are constructed on a democratic setting and simply cannot be directly applied to explain the variation of fiscal outcomes in authoritarian regimes, as most authoritarian regimes do not face competitive elections and are not directly pressured by the demand of voters. The mechanism of representation and conflict of interest is very weak, if not absent in authoritarian regimes, thus the political factors that affect the fiscal balance in democratic regimes have little implications in authoritarian regimes. The political aspects of fiscal deficits in authoritarian regimes remain largely unaddressed in the literature.

This paper tries to make a small contribution to the theoretical and empirical literature on the political explanation of fiscal deficits in authoritarian regimes. I argue that the time horizon of a dictator would affect the fiscal outcome of the country by changing the relative costs and benefits of incurring a fiscal deficit. When a dictator has a short time horizon, she would heavily discount the consequences of overspending in the future and is thus more inclined to overspend in the present. In contrast, when the time horizon of the dictator is long, she would fully take the consequences of overspending in the future into account and would thus spend more responsibly in the present.

In chapter 2, I present a formal model on how the time horizon of a dictator affects her spending decisions. Since a dictator's time horizon is not directly observable, I discuss several political factors that would affect the dictator's time horizon and hypothesize on how they would influence her spending decisions.

In chapter 3, I present the empirical analysis of the relationship between the factors affecting time horizon and fiscal balance. In section 3.1, I discuss the methodology of the empirical analysis. In section 3.2, I describe how the final dataset is obtained and explain the measurement of the variables of interest. In section 3.3, I present, discuss, and interpret the results of the analysis.

In chapter 4, I conclude and discuss the shortcoming of this paper and the venue of future research.

2. Theoretical Perspective: Time Horizon and Fiscal Deficit in Authoritarian Regimes

In Mancur Olson's theoretical world, there are two types of bandits (dictators): first, there is the roving bandit, who is merely trying to "hit and run" and cares nothing about the future of those she robs. She takes everything she can and never comes back; and second there is the stationary bandit, who decides to stay in the village and be fed by regular tributes. Since she decides to stay for a long period of time, she only takes from the population at a rate where productivity and the incentives to produce are not affected. The stationary bandit also invests in growth-enhancing public goods, so she will receive more in the future.

Olson's story of the bandits is a story of time horizon. The "stationary bandit" in Olson's account forgoes the benefits of the present for greater benefits in the future. This applies to public goods provision (Olson 1993), tax rate (Olson 1993), and foreign aid effectiveness (Wright 2008). Dictators with a longer time horizon take less and provide more with the future in mind. The same logic should apply to fiscal discipline. Dictators with a longer time horizon would take into account the consequences of overspending and accumulation of public debt. In the world of authoritarian politics, government spending could be used to please the masses with public goods, co-opt opponents with bribes, pay security services to crush dissidents, or could even be misappropriated and enter into the dictators' private account. While spending enhances the survival of the regime or provides pleasure

for the dictator today, the cost of spending is often realized much later in the future. Fiscal deficits are usually covered by public debt, and it may take years to reach to a point where the government has to increase taxes, cut spending, or print money to repay the accumulated debts. All these actions have serious economic as well as political consequences.

Dictators who do not expect to remain in power by the time the bills have to be paid will not take the political and economic consequences of the fiscal deficit into consideration, while rulers with longer time horizons would take full account of the political and economic consequences that might threaten the survival of the regime in the long run.

2.1. A Brief Model on the Relationship between Time Horizon and Fiscal Balance

In this section, I construct a brief formal model to analyze how a dictator's spending decision is affected by her time horizon. In reality the dictator's spending decision should be an infinite horizon optimization problem, yet to avoid unnecessary complications, I will instead use a two-period model. In this model, there are two time periods: *t=0* represents the present and *t=1* represents the future. The total amount that the authoritarian regime spends is *x*, and the expected tax revenue of the regime is *r*. For simplification, I assume that the tax revenue *r* is fixed. With such specification, *(r-x)* represents the fiscal balance of the regime. When

(r-x) is positive, the regime has a fiscal surplus, while when *(r-x)* is negative, the regime has a fiscal deficit.

The optimization problem of the dictator is a trade-off between the utility of spending in the present *(t=0)* and its consequences in the future *(t=1)*. Here I am assuming that the dictator gains utility from staying in power, and government spending can be in the form of public goods such as roads and schools, private goods such as jobs and transfers, or repression such as internal security service or military. Government spending would increase the chance of political survival of the dictator and indirectly generate utility for the dictator. Moreover, the dictator could gain utility by misappropriating public funds for her private gains, such as building luxurious palaces or wiring money to foreign bank accounts. The choice between these forms of spending is widely discussed in the literature (de Mesquita et. al 2005; Withrobe 1998), yet since it is not the focus of this paper, I do not differentiate and model these forms of spending separately. Instead, the utility from all forms of spending are aggregated and expressed in the dictator's utility function. More complicated models incorporating the differential effects of these spending and how they interact with the dictator's time horizon could be a further venue of research.

The more the dictator spends today, the more utility she gains. However, there is likely to be a limit on the level of utility that the dictator can gain from spending, and the marginal utility from spending should be decreasing as the amount of spending becomes large. I therefore use the following function to represent the utility that the dictator gets from spending today:

$$U(x_{t=0}) = c - 1/2(b-x)^2$$

The constant *c* represents the maximum level of utility that the dictator can get from spending, while the parameter *b* represents the level of spending at which the maximum utility c is achieved. In other words, *b* is the highest level of spending that the dictator would ever desire. Thus *b* measures the propensity of spending of the dictator, which can be different across countries due to cultural differences and might fluctuate across time in response to external, unexpected political and economic events.

The consequence of today's spending in the future is summarized by the following utility function:

$$U(x_{t=1}) = m(r-x)$$

m is the coefficient measuring the total economic and political consequences of fiscal balance. When *(r-x)* is positive, the regime has a fiscal surplus and *m* represents a benefit from having the fiscal surplus; while when *(r-x)* is negative, the regime has a fiscal deficit and *m* denotes the cost of incurring the fiscal deficit. Here the utility function is linear, but in reality, the utility function may be non-linear as the cost of incurring a deficit may well be higher than the benefit of having the same level of surplus and the cost may become increasingly higher as the deficit grows larger. Again, the linear cost function is used for simplification only and can be easily replaced by a non-linear function without changing the prediction of the model.

The total utility of the dictator is the sum of utility of the present and the utility of the future. The cost of fiscal deficit in the case of overspending when (r-x)< 0, and the benefit of fiscal surplus when (r-x) >0 depends on how the dictator discounts the future. Let γ be the discount factor between the utility of spending in the present and its consequence in the future. When γ =0, the dictator has an extremely short time horizon and would maximize the utility of the present without taking into account the cost of the deficit in the future. When γ =1, the dictator has an extremely long time horizon and values the utility of the spending in the present as much as that in the future. The two extremes are unlikely scenarios and in reality, the value of γ fluctuates between 0 and 1.

Combining the utility of the present and the utility of the future, the dictator's utility function is:

$$U(x)=c-1/2(b-x)^2+\gamma\, m(r-x)$$

The dictator maximizes her overall utility $U(x)$ and the solution of her decision problem is presented below:

$$U(x)=c-1/2(b^2+bx-x^2)+\gamma mr-\gamma\, mx$$

$$EU(x)=b-x-\gamma m$$

$$0=b-x-\gamma m$$

$$x=b-\gamma m$$

We can see that x is a decreasing function of γ, implying that a dictator with a longer time horizon would spend less. When a dictator's time horizon is extremely short (γ =0), $x=b$. The dictator would spend as much as she desires today without

considering future consequences. Alternatively, when the time horizon of the dictator is infinitely long (γ =1), $x=b-m$. In such cases, the dictator would fully take the cost of fiscal deficit into account.

In the following section, I will discuss the factors that may affect the time horizon of the dictator, which is represented by γ in this section.

2.2. Factors affecting the time horizon of authoritarian rulers

The formal model in the previous section shows that a dictator's time horizon serves as a discount factor that affects her spending decision. Ideally, if we can acquire the time horizon of the dictator (γ), we can empirically test its relationship with the fiscal balance of the regime. Unfortunately, time horizon is an abstract concept and has no direct representation in the real world. Established theories suggest that there are several factors affecting the stability and thus the survival of authoritarian regimes. In particular, institutions, term limits, and political environments influence the stability of a regime, thus affect the time horizon and the discount factor (γ) of the dictator. In the following section, I will explore each of these factors in greater detail.

2.2.1 Institutional Factors

The first factor that affects the time horizon of the dictator is the institutional resources she commands. There are two main institutions that are discussed in the literature: political parties and legislature. It is generally agreed in the literature

that party organizations and legislative institutions can increase the resilience of authoritarian regimes (Slater 2003; Smith 2005; Magaloni 2006; Brownlee 2007; Gandhi and Przeworski 2007; Svolik 2012).

It is suggested in the literature that authoritarian parties serve three major functions to stabilize an authoritarian regime. Firstly, authoritarian parties facilitate cooperation within the ruling coalition and minimize conflicts caused by asymmetry information. When power is shared among members of a ruling coalition, it is often feared by other members that the dictator would accumulate and eventually monopolize power. Formal institutions like political parties solve commitment and monitoring problem of the ruling elites by providing greater transparency and regular interaction (Svolik 2012). Secondly, political parties help authoritarian regimes gather information from and transmit political messages to the localities, mobilize and gain political support from the masses (Huntington 1968; Smith 2005; Geddes 2008). The party apparatus thus enhances the resilience of the regime by minimizing the risk of revolts and massive protests in times of crisis. Lastly, political parties facilitate the dictator in expanding the pool of supporters and marginalizing dissidents. By promising higher political positions in the party hierarchy, dictators gather support using politicians' vested interest in the party and control dissidents vice versa (Svolik 2012).

While political parties stabilize the regime by minimizing conflicts within coalition and expanding the support of the dictator from the masses and politicians, legislative institutions provide a platform to negotiate, co-opt, and bargain with influential opposition groups. In cases when opponents have strong public support

and the use of force is costly, the dictator can co-opt selective members of the opposition group with legislative positions and offer policy concessions (Gandhi 2008; Gandhi and Przeworski 2007). With a platform of regular interaction with co-opted opposition groups, the dictator can minimize the risk of full-scale revolt or protest, making the regime more stable.

In summary, existence of political parties and legislature stabilizes the regime, thus increases the dictator's chance of survival in crisis. With higher chances of survival, the time horizon of the dictator is longer, the discount factor is (γ) larger, and thus the dictator's tendency to spend irresponsibly and create a fiscal deficit is lower. Formally, I hypothesize the following:

Hypothesis 1a: the existence of political parties in authoritarian regimes would have a positive effect on fiscal balance

Hypothesis 1b: the existence of legislative institutions in authoritarian regimes would have a positive effect on fiscal balance

2.2.2 Term Limits

The second factor that affects the time horizon of the dictator is term limits. Many authoritarian regimes have term limits that limit the number of years the executive leader can stay in office. Term limits include constitutional laws such as the constitutional term limits of presidents in PRI-dominated Mexico. When terms limits are enforced, the dictator expects to be in power for only a short period of time. She

has a short time horizon even though she has no electoral pressure. The discount factor (γ) is small and as a result, the dictator is more likely to spend irresponsibly and pass on a fiscal deficit to her successor.

Hypothesis 2: The existence of term limits of the executive leader in authoritarian regimes would have a negative effect on fiscal balance

2.2.3 Political Environment Factors

The third factor that affects that the time horizon of the dictator is the political environment she faces while in office. The dictator would evaluate the political environment to determine the likelihood of staying in power in the immediate future. When the political environment is unstable and hostile and when coups and revolts are frequent, the dictator would expect that she could be removed from power easily and thus would have a shorter time horizon. In contrast, when the political environment is stable and coups and revolts are not frequent, the dictator would expect that she would stay in power in the coming future and thus would have a longer time horizon.

The dictator could assess her political risk of removal based on the experience of her predecessor. I propose that there are two major measures that a dictator would use to evaluate the political risk of removal. The first is the manner of which the predecessor of the current dictator left office. When the current leader's predecessor left office due to external, unexpected, and violent events like assassinations, foreign interventions, civil wars, and revolts, the current dictator

would consider her political environment to be hostile, unstable, and violent, and would thus shorten her time horizon.

The second measure of the political environment is the frequency of successful or attempted coups. A history of frequent coups implies that the ruling coalition and the military are disunited, thus making the regime violent and unstable.

In sum, when the dictator's predecessors are removed from power by violent political events or when coups are frequent in the regime, the dictator's discount factor (γ) is small, and she would be more likely to overspend and create a fiscal deficit.

Hypothesis 3a: The external, unforeseen, and violent power transition of the predecessors of the current dictators in authoritarian regimes, would have a negative effect on fiscal balance

Hypothesis 3b: The frequency of previous successful or attempted coups, would have a negative effect on fiscal balance

The summary of the factors affecting the time horizon of authoritarian rulers and how they influence fiscal balance is illustrated in the following diagram:

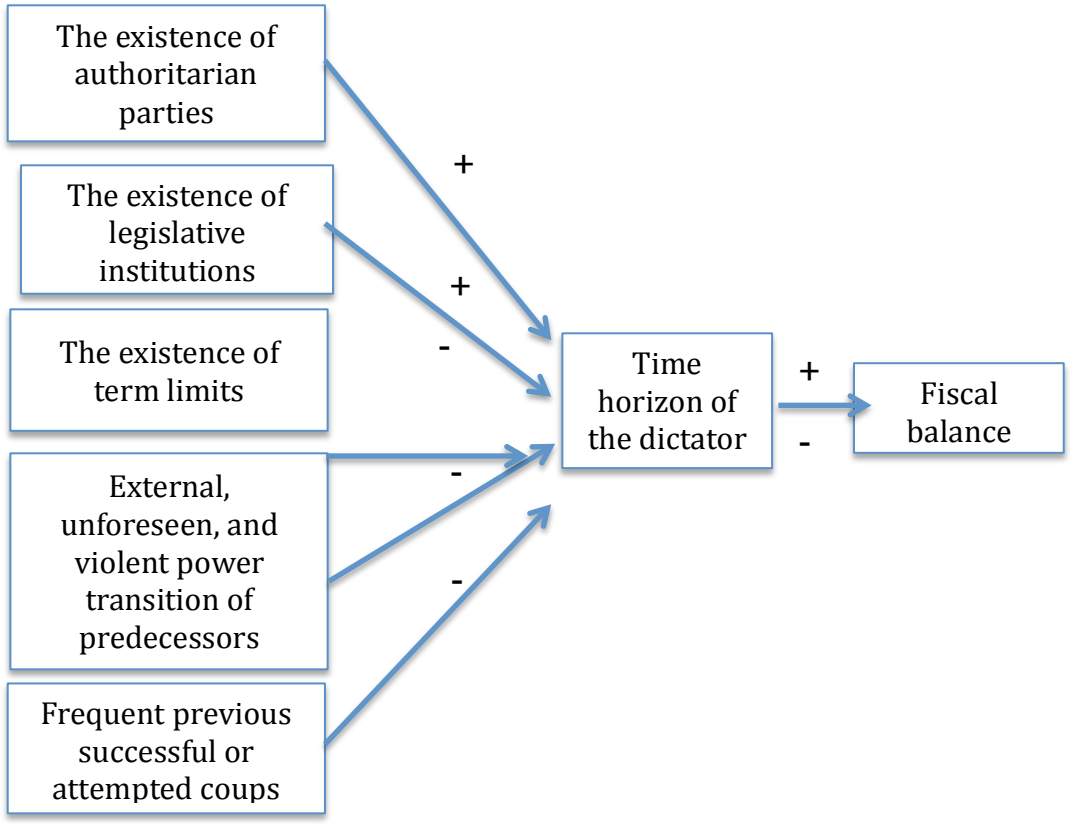

Figure1: Causal Diagram of the Theoretical Argument

3. Empirical Analysis: Testing the Relationship between Time Horizon and Fiscal Balance

3.1. Methodology

In this section, I discuss the methodology used to test the relationship between the factors affecting the time horizon of the dictator and the fiscal balance of the regime.

The dependent variable of interest is the fiscal balance of an authoritarian regime (*Y*) and there are five independent variables of interest, as discussed in the previous section: the existence of authoritarian parties (*party*), existence of legislative institutions (*leg*), the existence of term limits (*term*), external, unforeseen, and violent power transitions of predecessor (*utransition)* and frequent previous successful or attempted coups (*attcoup*). The relationship that I am interested in testing is summarized by the following equation:

$$Y_{it} = \alpha + \beta_1 party_{it} + \beta_2 leg_{it} + \beta_3 term_{it} + \beta_4 utransition_{it} + \beta_5 attcoup_{it} + \beta_6 con_{it} + \varepsilon_{it},$$

β_1 to β_5 are the five major coefficients of interest. The theory predicts that the institutional factors (the existence of authoritarian parties and the existence of legislative institutions) have a positive effect on fiscal balance, thus β_1 and β_2 should have a positive sign. In contrast, the existence of term limits and the political environment factors (external, unforeseen, and violent power transition of

predecessors and frequent previous successful or attempted coups) have a negative effect on fiscal balance, therefore β_3, β_4, and β_5 should have a negative sign. Formally, I would like to test the following hypotheses:

Hypothesis 1a: $\beta_1>0$ (the existence of political parties in authoritarian regimes would have a positive effect on fiscal balance)

Hypothesis 1b: $\beta_2>0$ (the existence of legislative institutions in authoritarian regimes would have a positive effect on fiscal balance)

Hypothesis 2: $\beta_3<0$ (the existence of term limits of the executive leader in authoritarian regimes would have a negative effect on fiscal balance)

Hypothesis 3a: $\beta_4<0$(the external, unforeseen, and violent power transition of the predecessors of the current dictators in authoritarian regimes, would have a negative effect on fiscal balance)

Hypothesis 3b: $\beta_5<0$ (the frequency of previous successful or attempted coups, would have a negative effect on fiscal balance)

Assuming that the error term $\varepsilon_{i,t}$ is uncorrelated with the dependent variables, running an Ordinary Least Square Regression (OLS) will give us unbiased estimates $\hat{\beta}_1, \hat{\beta}_2, \ldots, \hat{\beta}_5$ of the interested coefficients. Moreover, the standard error of the coefficient estimates $\hat{\beta}_1, \hat{\beta}_2, \ldots, \hat{\beta}_5$ can be computed from the regression, which makes

the testing of our hypotheses possible. In particular, if a coefficient estimate has the expected sign and is significant at 5% level, the null hypothesis corresponding to the coefficient can be rejected, and we can conclude that the independent variable in question indeed has an effect on the dependent variable.

For the hypothesis testing to be valid, it is important that the correct standard error of the estimates is used. Since I am using cross-national panel data and running a pooled OLS regression, the i.i.d. assumption of using the regular OLS standard error is likely to be violated. Therefore I use robust standard error throughout this paper to take into account possible contemporaneous correlation and heteroskedasticity of the error term.

Besides using the correct standard error, it is also important to sufficiently control the regression. The most important assumption of unbiased OLS regression is the independence of the error term and the independent variables. This assumption does not hold if there are omitted variables correlating to both the dependent and independent variables (omitted variable bias). Therefore, I am adding four sets of controls $(con_{i,t})$ to reduce the danger of omitted variable bias and increase the accuracy of the estimation.

Firstly, I would like to control for the economic conditions of the country-year observations. Keynesian economists believe that governments should expand spending during recessions to boost the economy and help the economy to get out of the recession sooner. If the authoritarian government is Keynesian, it would spend more when economic growth is sluggish and less when the economy is

performing well. Thus, I include GDP growth in the regression to control for the possible spending reactions to the business cycles.

Secondly, I would like to control for the availability of natural resources. Countries that are rich in natural resources are much less likely to be constrained in their spending as natural resources create additional sources of revenue besides tax. The consequences of overspending may be very different for dictators in countries that are rich in natural resources compared to countries without natural resources, thus they are likely to have different spending decisions and different reactions to time horizons. Therefore, I include measures on oil and gas production to control for these effects.

The third set of controls I add to the regression are the three decade dummies for 1980s, 1990s, and 2000s. These decade dummies are added to control for the characteristics that are specific to a given period of time, for example the democratization wave in the 1990s.

Finally, I include a full set of country dummies to control for the country-fixed effects in spending. Certain cultures may have an impact on both the dependent and independent variables of interest. For example, Asian countries have a more conformative culture which can assist the party-building process and at the same time they are more conservative in spending and thus more likely to have a fiscal surplus. Correlations like this would bias the regression results, if the country-fixed effects are not controlled.

3.2. Data and Measurement

3.2.1 Description of data

The dataset that I will use in the regressions is a merged dataset combined from four major datasets. The first is a panel dataset that contains fiscal balance of 96 countries from 1970 to 2012. The data comes from the International Financial Statistics (IFS) published by the International Monetary Fund (IMF) and it is supplemented by a dataset from Shi and Svensson (2006) because the latter contains additional observations for several countries[1]. The Shi and Svensson dataset is originally derived from a previous version of IFS and uses similar measurement methods, thus there should be minimal measurement discrepancy between the two datasets.

The second major dataset comes from Milan Svolik's Institutions of Dictatorship. It is a panel dataset that covers 135 authoritarian countries from 1946 to 2008. The dataset includes all the countries that the IFS dataset covers, with the exception of Namibia and Lebanon. This dataset contains most of my independent variables of interest, including measures for the existence of authoritarian parties (*party*), existence of legislative institutions (*leg*), tbe existence of term limits (*term*), external, unforeseen, and violent power transitions of predecessors (*utransition)*. The details of these measures would be discussed later in this section.

[1] Additional countries contain in the Shi and Svensson dataset are Argentina, Burundi, Brazil, Chile, Egypt, Guyana, Maldives, Mexico, Romania, Sierra Leone, Suriname, Thailand, Uruguay, and Zimbabwe.

The data on my last independent variable of interest, frequent previous successful or attempted coups, comes from Arthur Banks' Cross National Time Series Data Archive. The dataset contains records of successful and attempted coups in 127 countries from 1946 to 2012.

The last dataset contains all the control variables that I use in the regression. It comes from the Quality of Governance dataset published by University of Gothenburg. The dataset contains measurement of economic growth for 194 countries from 1961 to 2011 and data on oil and gas production for 177 countries from 1946-2011.

After merging the first two major datasets that contains the measure of the dependent variable and the first five independent variables, 53 authoritarian countries and 947 country-years of observations remains. It is worth noting that the scope of authoritarian countries is significantly reduced from 135 to 53. The major loss of data is due to the limited coverage of authoritarian countries in the IFS dataset, since the IFS dataset covers only 96 countries after 1970, and the 96 countries include democratic regimes as well. Alternative fiscal balance data could be obtained from the World Development Indicator (WDI), which contains 148 countries but only years after 1990. Since very few authoritarian countries remain not democratized by 1991, the WDI dataset contain very few observations of interest, thus is not used in this analysis.

Since the second dataset claims to have only authoritarian regimes, the merged dataset should contain no non-authoritarian regimes, since they should have been deleted because there are no matching values. Yet it is still possible that certain

country-year observations remain even after the countries are democratized. As a precautionary measure, I employ the Boix, Miller, and Rosato's political regime dataset, which contains a regime type indicator, to make sure all the remaining country-year observations are authoritarian regimes. The precautionary test results in no loss in data, which confirms the validity of the merged dataset. This merged dataset, which contains 53 countries and 947 country-year observations, would be used as my primary dataset for the regression analysis. The summary statistics of this primary dataset can be found in Appendix I.

The other two datasets containing measures of the previous successful or attempted coups and control variables are merged into the primary dataset. No loss of data is incurred after these merges.

3.2.2 Measurement of Variables of Interest

Dependent variable

The dependent variable, fiscal balance, is measured by the fiscal balance in cash as the percentage of GDP. The advantage of using percentage of GDP is that it controls for the difference in economic output of different countries. Authoritarian countries vary by their economic size. Two million US dollars of fiscal deficit might not be a big issue for China, which has a GDP of 8.227 trillion US dollars in 2012, but such deficit might be immense for a small country like Malawi, which has a GDP of only 4.264 billion US dollars. Using the fiscal deficit or surplus as a percentage of GDP controls the economic size of authoritarian countries, so comparisons can be made on an equal scale.

Independent variables

Data on the existence of authoritarian parties comes from Svolik's "party" variable, which measures the existence and nature of political parties in authoritarian regimes. The original variable is a nominal measurement with three possible values: "banned", "single", and "multiple", where "banned" means parties are entirely banned in the regime; "single" means that only one party exists in the regime; and "multiple" means that multiple parties exist in the regime. A binary variable is created to indicate whether a party exists in an authoritarian regime and the party indicator is taken to be 1 when the original variable is "single" and "multiple".

The legislature variable comes from Svolik's "legislative" variable. The original variable is a nominal variable measuring the existence and characteristics of the legislature in the authoritarian regimes and there are six possible values: "none", "nonpartisan", "unelected or appointed", "one party or candidate per seat", "largest party controls less than 75% of seats", and "largest party controls more than 75% of seats" where "none" means that legislative institutions are absence in the regime; "nonpartisan" means that legislative institutions exist in the regime but the members of the legislature are not partisan; "unelected or appointed" means that the members of the legislature are not unelected or appointed by the political leaders of the regime; "one party or candidate per seat" means that there is only one candidate or party competing for a seat in the legislature. A dummy variable is created to indicate the existence of legislative institutions in the regime. All the five

values in the original variable indicating the existence of legislative institutions are coded as 1, and the "none" value is coded as 0.

Data on the existence of term limits comes from the "exit" variable from Svolik's dataset, which measures how a dictator leaves office. The exit variable is a nominal variable with 14 possible values: "assassination", "foreign intervention", "elections", "resignation", "civil war", "interim", "revolt", "consensus", "natural death", "stepdown", "coup", "no contest", and "term limit". If the predecessor of the current political leader left office due to the expiration of his or her term limit, it implies that term limit exists in the system. Therefore, I create a binary variable from the original variable, with 1 representing the existence of term limits in the political system, and 0 representing the absence of term limits.

The data on external, unforeseen, and violent power transitions of predecessors also comes from Svolik's "exit" variable. I consider five types of power transition to be external, unforeseen, and violent for dictators: assassination, coup, foreign intervention, civil war, and revolt. I assume that the occurrence of any of these violent events are threatening to the current dictator so I combine all the five values into a binary values, with the occurrence of all one of the five violent events as 1, and nonoccurrence as 0.

I use exit of the dictator's predecessor, not the value for herself, because she cannot foresee the future and she would evaluate her political environment based on experience of her predecessor.

Data on frequent previous successful or attempted coups comes from Arthur Banks' Cross-National Time Series Data Archive. The original variable is a nominal

measure with four possible values: “attempt coups”, “attempted coups”, “plotted coups”, and “alleged coup plots”. Both successful and attempted coups indicate that there is a group of opponent among the ruling elite who has sufficient resources to oppose the current leader, and in both cases it is a threat to the dictator, so I assume that the dictator treats successful and attempted coups as the same. Therefore I convert this variable into a binary variable and count the number of coups in each country each year. Since the dictator assess her political environment from events in the past, I measures the number of coups happened in past five years, instead of the coups of the particular year.

Control variables

The natural resources variables come from Michael Ross’s Oil and Gas Dataset, extracted from the Quality of Government dataset. Oil and gas production are used to indicate the availability of natural resources of the country. Oil and gas production are measured as the total volume of oil or gas produced in the specific country multiplied by the world price of oil in a single benchmark year. Since I am only interested in whether the country is oil- or gas-rich rather than the size of the production, two binary variables are created to indicate the availability of natural resources of the countries of interest.

The economic growth data comes from the World Development Indicators from the World Bank. It measures the annual percentage growth rate of GDP at market prices based on constant local currency.

3.3. Empirical Results and Interpretation

In this section, I present and discuss the empirical results. As discussed in section 3.1, I am interested in testing whether the variables affecting a dictator's time horizon influence her spending decision, thus the country's fiscal balance in the ways that I hypothesized.

The main equation for the estimation is:

$$Y_{it} = \alpha + \beta_1 party_{it} + \beta_2 leg_{it} + \beta_3 term_{it} + \beta_4 utransition_{it} + \beta_5 attcoup_{it} + \beta_6 con_{it} + \varepsilon_{it},$$

The key variables of interests are the existence of authoritarian parties (*party*), existence of legislative institutions (*leg*), the existence of term limits (*term*), external, unforeseen, and violent power transitions of predecessors (*utransition)* and frequent previous successful or attempted coups (*attcoup*).

According to the theory, I am expecting β_1, and β_2 to be positive β_3, β_4, and β_5 to be negative. The detailed mechanism of such inferences has been discussed in section 2.2.

Table 1; Effects of institutional factors, term limits, and political environment factors of fiscal balance 1970-2008

In Table 1, I present the regression results of four different specifications. Model 1 includes only the independent variables of interest. Model 2 controls for GDP growth and availability of natural resources. Model 3 controls for decade-and country-fixed effects but does not include economic and natural resources variables.

		Model 1 fiscal balance	Model 2 fiscal balance	Model 3 fiscal balance	Model 4 fiscal balance
Variables of Interest:					
β_1	Existence of authoritarian party	10.83**	15.92***	4.27**	5.13***
		(4.42)	(5.22)	(1.70)	(1.96)
β_2	Existence of legislative institutions	-8.39*	-7.55	-5.87**	-6.74*
		(5.09)	(4.91)	(2.95)	(3.72)
β_3	Existence of term limits	-6.05***	-2.47	0.75	-0.47
		(2.10)	(2.85)	(1.98)	(2.67)
β_4	External, unforeseen, and violent	-5.40	-4.18	0.15	-1.07
	power transition of predecessor	(4.40)	(4.69)	(3.59)	(3.71)
β_5	Frequency of Previous Successful or	1.60	7.62	0.65	0.33
	attempted coups	(7.31)	(7.30)	(7.99)	(8.19)
Control Set 1					
Economic Condition	GDP growth		-0.32		-0.41*
			(0.34)		(0.24)
Control Set 2					
Natural Resources	Oil production		4.46		0.58
			(3.26)		(4.26)
	Gas production		30.74***		10.02***
			(6.22)		(2.23)
Control Set 3					
Decade Dummies	1980s dummy			-3.53*	-4.85**
				(1.87)	(2.20)
	1990s dummy			-4.63**	-5.76**
				(2.04)	(2.54)
	2000s dummy			20.85***	21.23***
				(6.70)	(7.19)
Control Set 4					
Country Dummies		Not Included	Not Included	Not Included	Included
	Constant	10.28**	-5.33	2.49	-3.44
		(5.20)	(4.82)	(2.93)	(4.90)
	Observations	781	752	781	752
	R-squared	0.007	0.069	0.685	0.687
	Robust standard errors in parentheses				
	*** p<0.01, ** p<0.05, * p<0.1				

Model 4 includes all four sets of controls and it will be taken as my main specification as it is least likely to lead to biased results.

In the following subsection, I will focus on model 4 and discuss the regression results of this main specification. Results of the other three models will be compared to that of the main specification later to see how the coefficient estimates change in response to added controls and whether they are robust across specifications.

3.3.1 Results

In the main specification (model 4), the coefficient on existence of authoritarian parties (β_1) is estimated to be 5.13 with its standard error being 1.96. The estimate is significantly positive, which is indicative of a positive effect of the existence of authoritarian parties on a country's fiscal balance. This is consistent with my hypothesis that the existence of authoritarian parties increases the dictator's time horizon, thus making his spending more responsible.

The coefficient of the existence of legislative institutions (β_2) is -6.74 with a standard error of 3.72. This result is in contradiction with my hypothesis since I expect that the existence of legislative institutions to increase the dictator's time horizon, thus should increase the fiscal balance rather than decreasing it.

The coefficient estimates of existence of term limits (β_3), external, unforeseen, and violent power transition of predecessors (β_4) and frequent previous successful or attempted coups (β_5) are -0.47, -1.07, and 0.33 respectively. Neither of these estimates is significant and they are very close to zero. The estimates of β_4 and β_5 are of the expected negative sign. I am expecting the estimates of β_3, β_4 and β_5 to be negative because the existence of term limits, external, unforeseen, and violent power transition of predecessors and frequent previous successful or attempted

coups decreases the time horizon of a dictator. The sign of the estimates of β_5 is not consistent with my hypothesis, however the mechanism is very small and insignificant.

In sum, the empirical support for my hypotheses is mixed. The estimate of the coefficient on the existence of authoritarian political party supports my hypothesis while the estimate of the coefficient on the existence of legislative institutions goes against my hypothesis. The results from the other three estimates are inconclusive because they are very small and insignificant.

3.3.2 Robustness

Here I compare the regression results across specifications to examine the robustness of the estimates. The estimates of β_1 are positive and significant across all four specifications. The magnitude of the estimates goes from 4.27 in model 3 to 5.13 in model 4, which is relatively stable. However, it is to be noted that the coefficient estimates in model 1 and model 2 are significantly larger (10.83 and 15.92 respectively). The large decrease in the magnitude of the estimates after controlling for the decades- and country-fixed effects is understandable because all the across country correlations between the independent and dependent variables now goes into the country-fixed effects.

The estimates on β_2 are negative in all four models and they are significant except in model 2. The magnitude of the estimates is also stable as there are only small variations across specifications (within one standard error). The result that the existence of legislative institutions has negative impact on fiscal balance seems

robust. This result cannot be explained from the perspective of the dictator's time horizon and may have arisen from other mechanisms which will be discussed later.

As for the estimates of $\beta_{3,}$ three of the four estimates are negative. The estimate in the first model is -6.05 and is statistically significant with a standard error of 2.10. This implies that the existence of term limits negatively impacts fiscal balance by 6.05% of GDP. However, the magnitude of the estimates quickly goes down to -2.47 in model 2, after controlling for GDP growth and the availability of natural resources. After controlling for decade- and country-fixed effects, the magnitude of the estimate goes further down to close to zero, and is even marginally positive in model 3. The change of estimates across specifications suggests that the results in model 1 are not robust.

Three of the four estimates of β_4 are negative and all of them are insignificant. The estimates of β_4 are -5.40 and -4.18 in model 1 and 2 respectively. Similar to the case of existence of term limits, the estimates become close to zero once the decade and country dummies are included.

Lastly, for $\beta_{5,}$ the estimates are all positive and insignificant. The magnitude of the estimates is small except that in model 2. These results seem to suggest that there is no clear effect of frequent previous coups on fiscal balance.

3.3.3 Discussion and Interpretation

Among the five variables of interest, the estimates on the existence of authoritarian parties and the existence of legislative institutions are significant and robust. However, they are pointing to different directions, with the first consistent

with my hypothesis while the second contradicts it. With the estimates of the other three variables either insignificant or not robust, it seems hard to conclude that the empirical results support the theory of time horizon in the determination of fiscal balance in authoritarian countries.

Even the positive result on the estimate of β_1, the existence of authoritarian parties, needs to be interpreted with caution. Although it is consistent with my theory of time horizon, the result could also arise from other mechanisms. The existence of party could influence the fiscal balance through factors other than the dictator's time horizon. For example, the existence of authoritarian parties may be correlated with the tax capacity of the country, which has a positive effect on fiscal balance by increasing the tax revenue.

The result on the estimates of β_2, the existence of legislative institutions, also needs to be explained by mechanisms other than my theory of time horizon. One possible explanation is that the legislative institutions in authoritarian countries may act as a platform of political demand from the public and the opponents of the regime. The dictator may be pressured to increase spending to cope with these demands, thus the existence of legislative institutions could have a negative effect on fiscal balance.

It should be noted that although the estimates of the coefficients on the existence of term limits are close to zero after controlling for decade- and country-fixed effects, they are consistently negative with relatively large magnitude before these controls are included. It is possible that term limits indeed have an effect on fiscal balance, however, as the variations of the term limits are likely to be mainly across

countries, the effect may seem to disappear after adding country dummies, as the correlation appears in the country-fixed effect coefficients instead.

4. Conclusion

In this paper, I explore how a dictator's time horizon would affect the fiscal balance of an authoritarian regime. I hypothesize that when a dictator's time horizon is short, he would heavily discount the future cost of spending, thus more likely to spend irresponsibly and incur a fiscal deficit. In contrast, when a dictator's time horizon is long, he would be more concerned with future costs of the spending today, thus more responsible in spending.

Since time horizon is not directly observed, I empirically test my hypothesis through several factors that should affect a dictator's time horizon. In particular, the existence of authoritarian parties and legislative institutions increases the time horizon of the dictator and thus has a positive effect on the fiscal balance of the country. Term limits, the occurrence of external, unforeseen, and violent power transition of predecessor, and frequent previous coups decreases the dictator's time horizon and thus have a negative effect on the fiscal balance of the country.

Testing these hypotheses using OLS regressions, I found limited support on my theory of time horizon affecting a country's fiscal balance. Only the estimate on one of the five factors of interest, the existence of authoritarian parties, shows strong support for my prediction; while the estimate on another factor, the existence of legislative institutions, contradicts my hypothesis. The estimate on the existence of term limits shows mild support for my hypothesis (only significant in Model 1), yet the result is not robust across specifications. The estimates on the other two factors show no conclusive influence on the fiscal balance.

Although there is limited supporting evidence, we should not rush to the conclusion that a dictator's time horizon does not affect his spending decisions. It is possible that a dictator's spending decision is indeed affected by his time horizon, but the influence is more on the types of spending rather than on the amount of spending. A dictator with shorter time horizon may be more likely to use money for private gains rather than to provide goods for the general public, because he is less interested in developing the economy and cultivating the society, the benefit of which may be realized only in the future. Constrained by the absence of data on the types of spending, the empirical implications of a dictator's time horizon on the type of his spending cannot be tested, thus is not explored in depth. However, this could be a venue of research in the future, if data on the types of spending becomes available.

Another limitation of my paper is the questionable quality of the data. There are only 53 countries and 947 observations in the final dataset that I take to the regression, and the total number of observations is further reduced to 781 in the regression due to missing values on some of the key variables. The major loss of data is due to the poor coverage of the IFS on authoritarian regimes, especially for the earlier years. Only a subset of authoritarian countries are included in my regression as a result of missing data, which may lead to sample selection bias, according to Michael Ross (2006). Even when there is no sample selection bias, a smaller sample leads to less accurate regressions, and makes it more difficult to obtain significant results. Therefore, re-testing the hypotheses using a higher-

quality dataset may yield in more informative results, and could be another future improvement of this paper.

Appendix I: Data Description

Summary Statistics of Variables of Interest

Variable Name	Observation	Mean	Std.Dev.	Min	Max
Fiscal balance as % of GDP	947	6.11	64.48	-180.64	776.60
Existence of authoritarian party	781	0.46	0.50	0	1
Existence of legislative institutions	781	0.80	0.40	0	1
Existence of term limits	910	0.11	0.31	0	1
External, unforeseen, and violent power transition of predecessor	910	0.25	0.43	0	1
Frequency of Previous Successful or attempted coups	947	0.14	0.35	0	1
GDP growth	915	3.72	5.94	-26.67	25.90
Oil production	947	0.39	0.49	0	1
Gas production	947	0.37	0.48	0	1

Fiscal Data of Authoritarian Regimes

Country	Period	Median	Means
Algeria	1994-2005	11.9300	12.8000
Argentina*[1]	1976-1982	-4.2239	-4.7342
Belarus	1998-2012	1.3100	0.8499
Bhutan	1990-2009	14.9900	14.2700
Brazil*	1976-1985	0.1500	0.4488
Burkina Faso	1973-2005	-1.6380	-1.8590
Burundi*	1975-1995	-0.1051	-0.9413
Cambodia	1996-2006	-2.3430	-2.1190
Cameroon	1995, 1998-1999	1.6500	1.5540
Central African Republic	2004, 2007-2010	4.8810	4.1100
Chad	1970-2001	-3.1240	-4.6340
Chile*	1975-1989	0.1269	0.5148
China	1977-2006	-0.0122	-0.0154
Ecuador	1970-1978, 2000-2002	-1.1930	-0.3573
Egypt*	1975-1995	-8.3010	-8.6260
El Salvador	1970-1983	-9.4760	-13.6300
Ethiopia	1990-2011	1.0410	0.3556
Fiji	1987-2006	-3.2710	-3.4640
Ghana	1972-1996	-1.1480	-0.9358
Guatemala	1982-1985	-3.6600	-3.4840
Guinea	1998-1999	3.2760	3.2760
Guyana*	1975-1991	-29.1900	-30.2700
Honduras	1970-1981	-1.4740	-2.0940
Jordan	1970-2012	-3.8740	-4.1020
Kenya	1970-2001	-2.8890	-2.4850
Kuwait	1970-2011	11.9900	16.2800
Lebanon[2]	1998-2004	-13.0100	-12.6500

[1] Fiscal data of countries with asterisk comes from the Shi and Svensson dataset

[2] Lebanon is dropped from the sample as this country is not measured in the Svolik dictatorship institution dataset

Liberia	1975-2005	-7.8250	-6.9210
Malawi	1975-1991	-7.9960	-7.8210
Maldives*	1984-1995	-4.6490	-4.4420
Mali	1976-1991	-4.3090	-4.6410
Mexico*	1980-1995	-5.5520	-5.0400
Namibia[3]	1990-2007	-1.0120	-0.4132
Nepal	1972-1990, 02-07	-2.7380	-3.7400
Nigeria	1972-2008	173.5000	325.2000
Nicaragua	1970-1983	-2.7900	-3.9110
Oman	1990-2001	-3.1480	-2.5230
Pakistan	1990-2011	-1.2560	-1.4580
Panama	1970-1990	-4.0690	-3.5550
Paraguay	1977-2002	1.3330	1.0710
Peru	1971-2000	-1.8190	-1.4540
Qatar	1970-2010	11.5500	14.9400
Romania*	1980-1990	3.2180	3.9820
Seychelles	1976-2012	-0.3103	-1.5950
Sierra Leone*	1975-1995	-7.5310	-7.8380
Singapore	1970-2012	3.6580	5.2140
South Africa	1970-1993	-4.3110	-4.3540
Suriname*	1980-1987	-15.2300	-12.1100
Syria	1975-2009	0.1855	17.6900
Thailand*	1976-1991	-2.9030	-2.5290
Tunisia	1990-2011	370.2000	480.7000
Uruguay*	1975-1984	-1.7860	-2.9020
Zambia[4]	1970-1999	-32.4000	-31.4900
Zimbabwe*	1976-1995	-6.7290	-7.5770

Party Data

Banned	Single	Multiple	NAs

[3] Namibia is dropped from the sample as this country is not measured in the Svolik's dictatorship institution dataset

[4] In the final dataset, only 1970-1991 is covered because institutional data is missing in Svolik's dictatorship institution dataset

179	157	452	159

Legislative Data

None	Nonpartisan	Unelected or appointed	One party or candidate per seat	Largest party controls less than 75%	Largest party controls more than 75%	NAs
160	41	65	196	158	161	166

Term limits data

Term limit	No term limits	NAs
97	645	205

Unforeseen Power Transition Data

Assassination	Civil war	Foreign intervention	Revolt	Coup	Others	NAs
6	34	21	12	155	514	205

Attempted Coups

Successful coups	Attempted coups	Plotted coups	Alleged coup plots	NAs
57	47	16	20	813

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